

Adding and Subtracting Decimals



Goal: Add and subtract decimals.

Vocabulary

Front-end estimation:

A method for estimating the sum of two or more numbers

EXAMPLE 1 Adding and Subtracting Positive Decimals

b.
$$4.9 - 2.76$$

$$\begin{array}{r}
8.10 \\
4.90 \\
-2.76 \\
\hline
2.14
\end{array}$$

to whole numbers and

Check: Round decimals

The answer is reasonable.

Check: Add 2.14 and

2.76 to see if you get

4.9. It checks:

2.14 + 2.76 = 4.9.

EXAMPLE 2 Adding and Subtracting Negative Decimals

a. Find the sum -13.2 + (-5.1).

Add |-13.2| and |-5.1|. $-13.2 + (-5.1) = \boxed{-18.3}$ Both decimals are negative, so the

sum is negative

b. Find the difference -3.01 - (-8.275).

First rewrite the difference as a sum: $\boxed{-3.01} + \boxed{8.275}$.

Subtract $\boxed{-3.01}$ from $\boxed{8.275}$.

Subtract
$$|-3.01|$$
 from $|8.275|$.
 $|8.275| > |-3.01|$, so the

sum has the same sign as 8.275

1. 4.097 + (-1.394)	2. -0.48 + 0.6	3. -3.25 + (-10.008)
	5. -11:2 - 15.71	6. 4.265 – (–1.9)
4 , 6.54 – 4.634		

EXAMPLE 3 Evaluating an Algebraic Expression

Coldest temperature The formula K = C + 273.15 is used to convert from degrees Celsius C to kelvins K. The world record for the coldest temperature on Earth is -89.2°C , recorded in Vostok, Antarctica in 1983. What is this temperature in kelvins?

Solution

To find the temperature in kelvins, substitute the Celsius temperature into the equation.

$$K = C + 273.15$$
 Original equation $K = \begin{bmatrix} -89.2 \\ 183.95 \end{bmatrix} + 273.15$ Substitute $\begin{bmatrix} -89.2 \\ -89.2 \end{bmatrix}$ for C.

Answer: The temperature in kelvins is 183.95 K.

Guided Practice Use the information above.

7. Suppose a scientist records a temperature of $-52.5\,^{\circ}\text{C}$ in Vostok, Antarctica. What is this temperature in kelvins?

EXAMPLE 4 Using Front-End Estimation

School You want to estimate the cost of your school supplies. Is the cost of the items shown (excluding tax) more or less than your \$40 budget?

School Supplies		
Notebooks	\$8.19	
Pencils	\$2.79	
Pens	\$4.39	
Backpack	\$23.58	

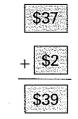
Solution

Use front-end estimation.

- 1. Add the front-end digits: the dollars.
- 2. Estimate the sum of the remaining digits: the cents.

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3.	Add	your	results.

\$ 8 .19	\$8. 19	To respond
\$ 2 .79	\$2.79	> \$1
\$4 .39	\$4. 39	
\$ 23 .58	\$23. 58	\$1
\$37		\$2



Answer: The cost of the items is less than your \$40 budget.

Guided Practice Use front-end estimation to estimate the sum.